ECO2003F

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Chapter 12

Factor Markets:

Labour

Abbreviations used in these slides. Please DON'T use them in your exam – use the full versions.

VMP_L = value marginal product of labour

MRP_L = marginal revenue product of labour

DD = demand

SS = supply

SR = short run

LR = long run

PC = perfect competition,

IC = imperfect comp.

- PC firm's short run demand for labour
- PC firm's long run demand for labour
- Market demand curve for labour
- Imperfect competitor's demand for labour
- The supply of labour
- Non-economist's reaction to the labour supply model
- Market supply curve, Monopsony, Minimum Wage laws, Labour Unions
- Monopoly Power and Wage rates
- Discrimination in labour markets, statistical discrimination
- Internal wage structure, Winner take all markets

Why did Tokyo Sexwale choose to become a government minister earning only R1.6 million rather than his previous salary of R5.4 million as chairperson to the Mvelapanda Group?

Similarly Tito Mboweni earned far less as governor of the Reserve Bank vs in the private sector. Why waste time in **public sector?**

There have to be **non-monetary benefits**, such as power and attention, not to mention the fact that when you sneeze stock markets rise or fall...

David Beckham earns 49 million dollars playing for LA Galaxy – would he be willing to do it for less?

Why does he earn so much?

Why didn't LA Galaxy hire me? Or you?

He has (1) **more than one potential employer** (2) the ability to **increase profits** for his employer and (3) **skills** that none of us have

?

What forces drive wages and other conditions of employment?

We need to look at **demand** and **supply** of labour.

Why do compensating **wage differentials** exist?

Given fixed capital (in the short run), and a firm selling output in a perfectly competitive market, **how much labour should a firm hire?**

Revision

Labour demand is **derived**–what does this mean?

How do I decide how much labour to hire?

<u>Keep hiring as long as:</u>

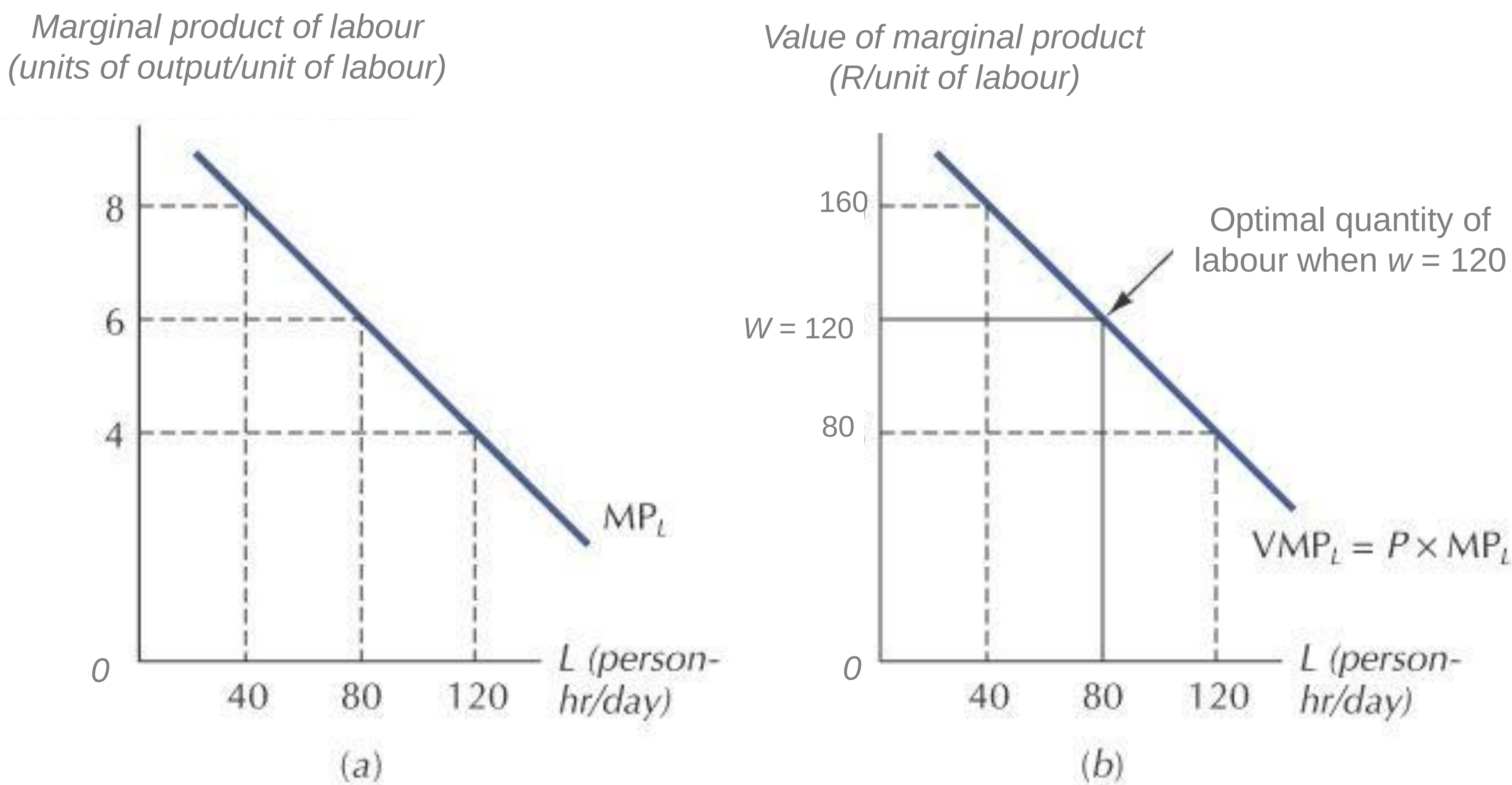
as long as the extra workers are "useful"

workers benefit >= workers' cost

$$VMP_L = P \text{ X } MP_L$$

Set $w = VMP_L$ and solve for L^*

Short-Run Demand for Labour under PC



Exercise

Given $MP_L = 10-(1/20)L$

And $P = 20$.

$$VMP_L = P.MP_L$$
$$= 20(10-1/20L)$$
$$= 200-L$$

Given $w = 120$, set $w = VMP_L$

$120 = 200-L$ Therefore $L^* = 80$

This is the algebraic equivalent of the graph

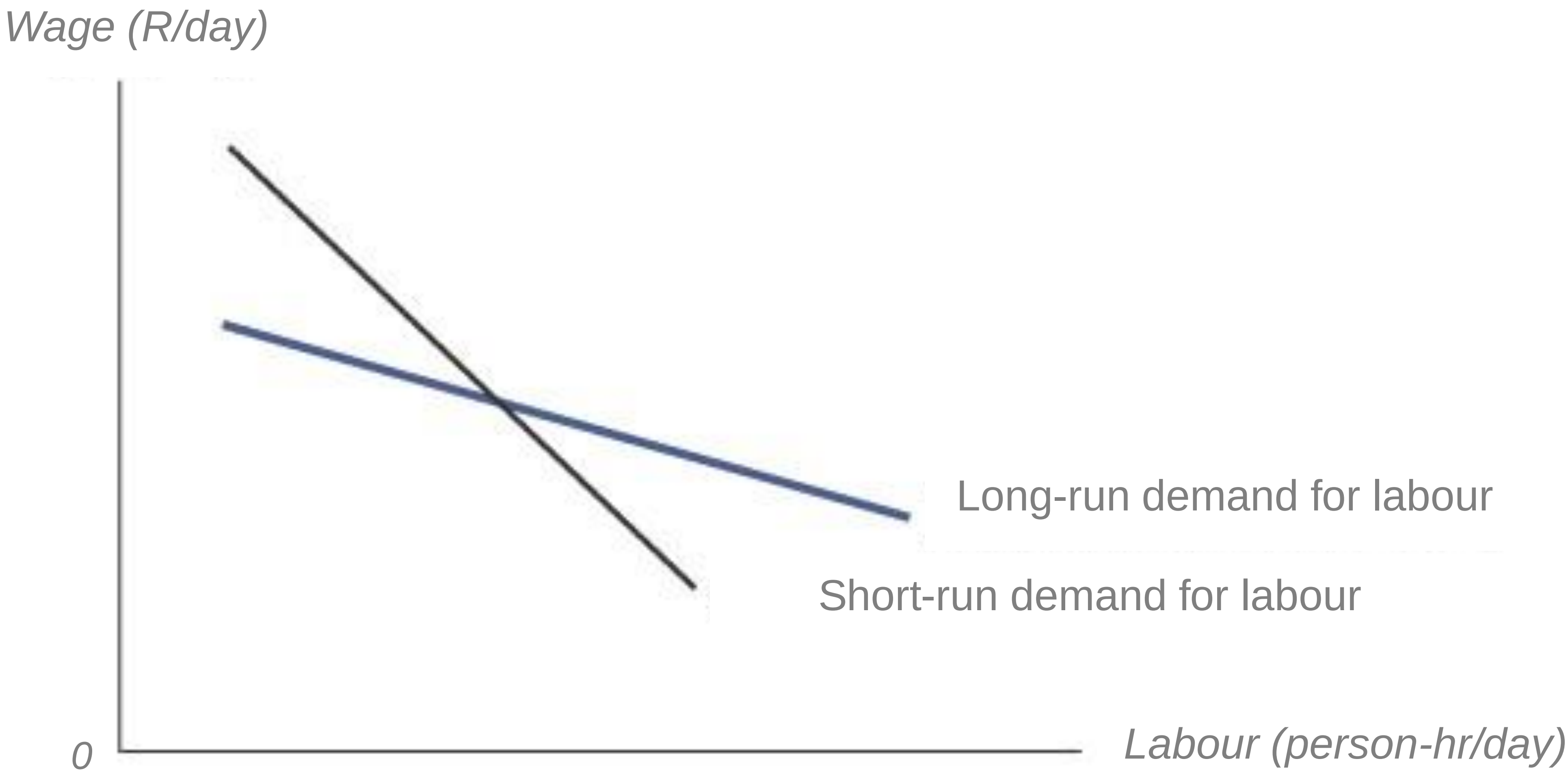
VMP_L shows us the **combinations of w and L that would be optimal** – i.e. the **demand** for labour at every wage rate

We assume **PC** in the **product** market, and the **labour** market. You can produce and hire as much as you want, **but can't affect w or P.**

<u>LR DD will be more elastic than SR DD</u>. Why? If the wage rate falls:

In the **short run**, hire more labour
In the **long run**, hire even more labour. Why?

Figure 12.2: Short and Long-Run Demand Curves for Labour



When will demand for labour be more **elastic**?
When will DD_L be more sensitive?

1. If the product demand is more elastic
2. The easier I can substitute other factors for L (so in LR it is more elastic – i.e. sensitive to changes in wage).

VMP_L is for one firm, each firm has different MP_L
What is the horizontal $\sum VMP_L$?

This sounds like the total Q demanded of L, for each w. Isn't this market DD_L? No.

Breaking down point 1 from the previous slide

If product demand is **elastic**

Then if price of the good changes,

Q_D of the good changes **a lot**

(it's **v sensitive** to changes in price)

So for e.g. If price falls, Q_D increases a lot

So firms need to hire a lot more labour

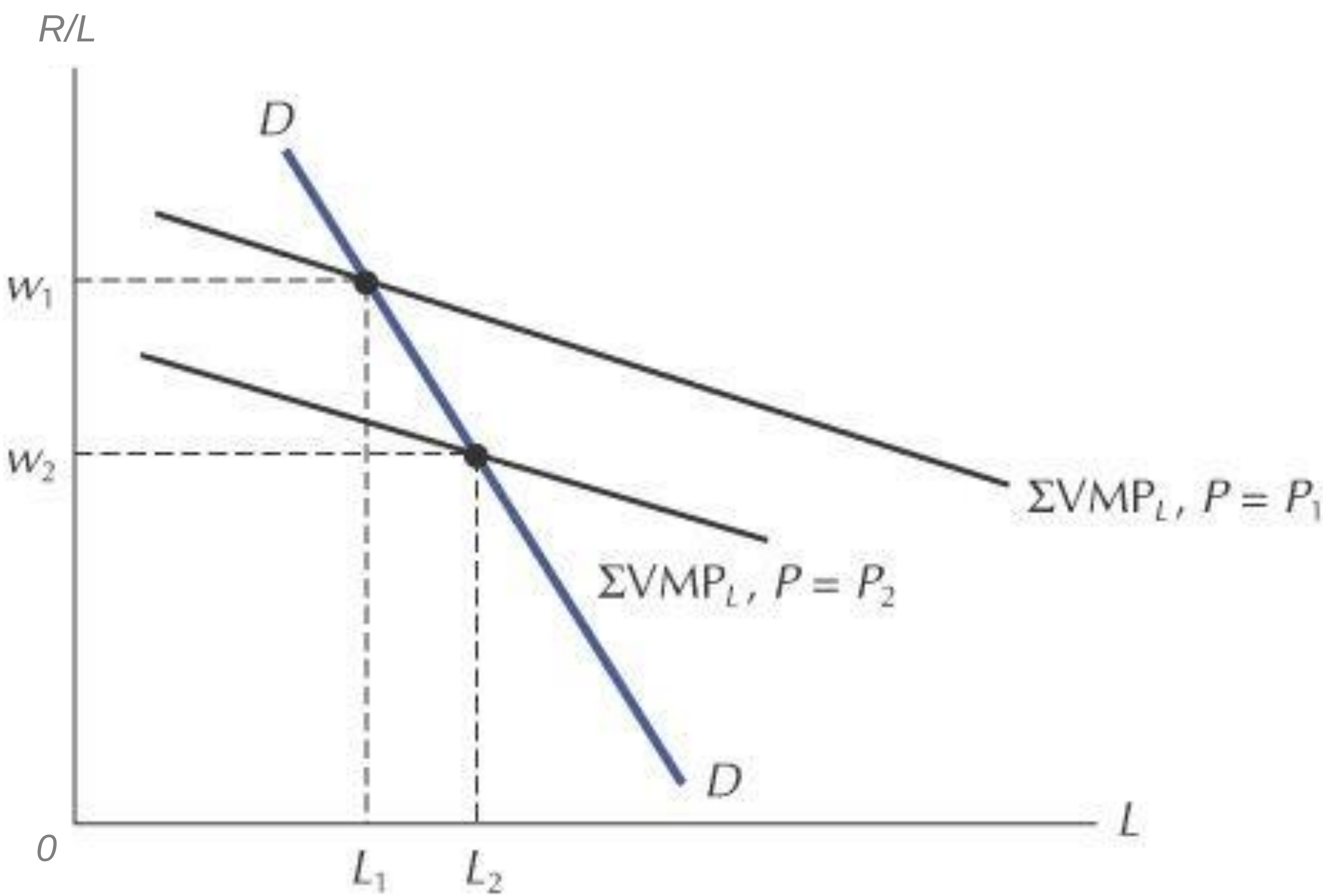
(to produce more to meet the increased demand)

So Q demanded of L will be elastic

(i.e. v sensitive to changes in price P)

If demand for the good is elastic

Figure 12.3: The Market Demand Curve for Labour



Why is the market demand curve for labour steeper than the horizontal summation of VMP_L ($\sum VMP_L$) for all firms?

Initially we're at w1, L1
Now the wage falls from w1 to w2

If **wage falls** from w1 to w2

→ every firm **hires more** labour
→ all firms **produce more** output
→ P, the price of output falls from P1 to P2
→ we move down the industry product DD curve
→ VMP_L = P.MP_L **shifts down** for every level of L
→ So for new w2, instead of reading off L* from the VMP_L for P1, but rather VMP_L for P2
→ we hire less labour than expected
→ market DD_L is steeper than horizontal $\sum VMP_L$

Why? Because all firms faced the lower wage w2, and not just one firm

When would we expect to see the market demand curve for labour be close to $\sum VMP_L$?

If the change in wages didn't cause a change in output price P

This will occur if the demand for L comes from more than one industry, and L is heterogenous

E.g. electricians are hired by many industries
So a change in wage will affect costs by only a small percentage in many industries, and thus not product price, so $\sum VMP_L$ = Market DD_L

In PC, **firms cannot affect output price**

Imperfect competitors can impact product price
imperfect competition = fewer competitors

Now demand for goods no longer perfectly elastic

Demand curves are now downward sloping

If you hire more labour, you have to cut prices to sell your extra output

We know $VMP_L = P \times MP_L$ for PC

Now we consider $MRP_L = MR \times MP_L$ for Monopoly

$MRP_L = MR \times MP_L$

$= \Delta TR/\Delta Q \times \Delta Q/\Delta L$

$= \Delta TR/\Delta L = dTR/dL$

i.e. MRP_L is the Δrevenue from ΔL, i.e. value of extra output produced from one more worker

Both MRP_L and VMP_L reflect an increase in revenue, from increasing labour.

But MR is generally less than price. Why?

However we still hire until **MRP_L = w**.

Perfect competition: DD_L is downward sloping

as you use more labour,

MP_L falls (diminishing returns)

And thus $VMP_L = P*MP_L$ falls

So the amt you're willing to pay for it (w), falls,

Under monopoly, DD_L is downward sloping

For the reasons above, **and**

Because $MRP_L = MR \times MP_L$ falls as Q rises

LR DD_L is more elastic than SR DD_L for Monopoly

And <u>Monopolist DD_L</u> <u>**is** Industry DD_L</u>

The supply of labour

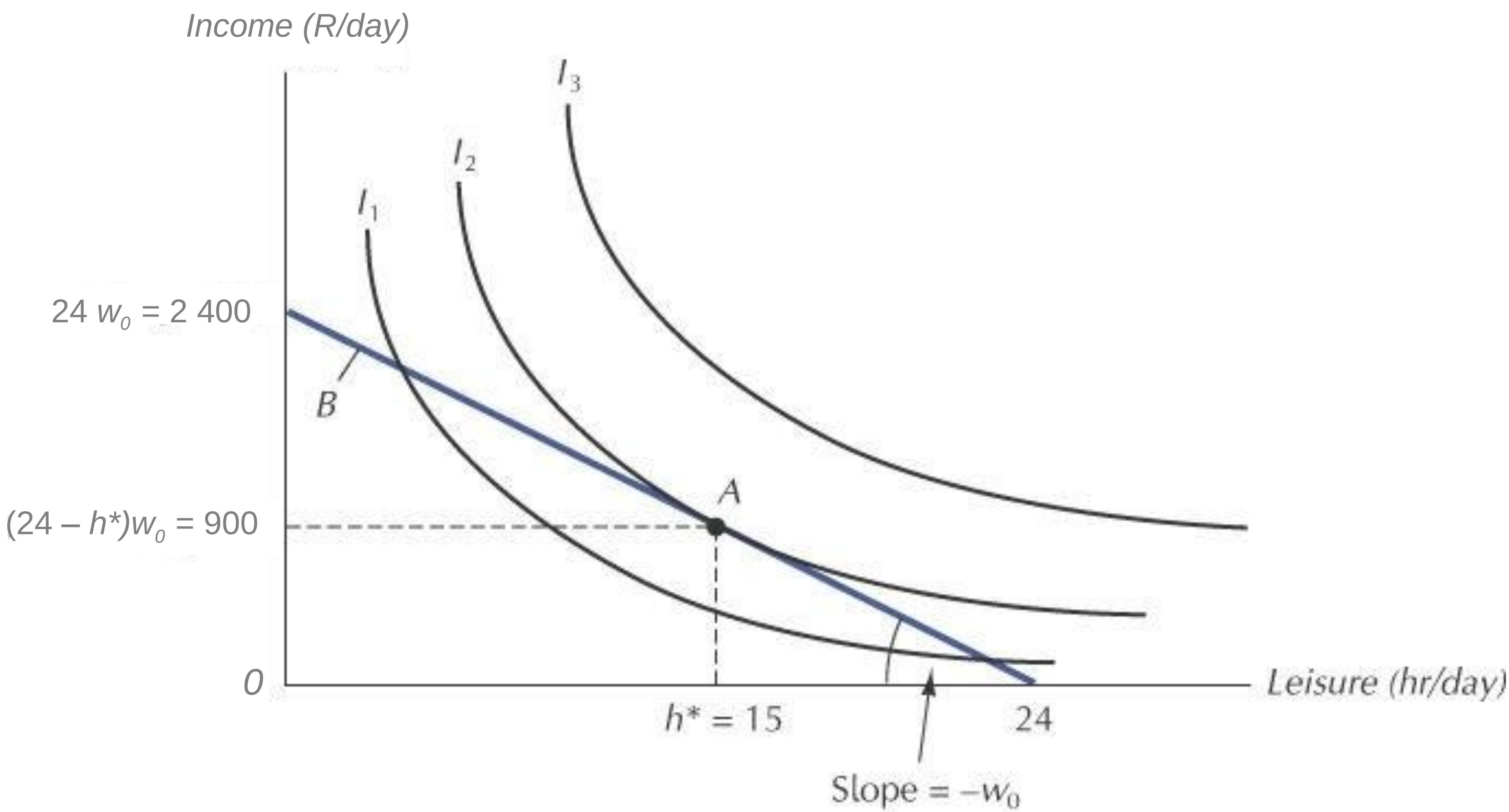
How does the student decide how much to work?

We can work, or be at leisure
Our two goods are **leisure**, and **income**

We use **consumer theory**:
<u>budget curve slope = indifference curve slope</u>

In Equilibrium,
w = MRS

Figure 12.4: The Optimal Choice of Leisure and Income



w_0 = R100/hr
h = hours of leisure

If don't sleep, income = R100/hr*24hrs = R2400

Move to left = work more

Amount of time working = 24 – h

Income = wage * hours working

The **budget curve** has equation M = w(24-h)

We want to know SS_L

How does h* change as wage rate w changes?

We obtain a **backward bending supply curve**

Why?

Substitution and income effects (curses)

Figure 12.5: Optimal Leisure Choices for Different Wage Rates

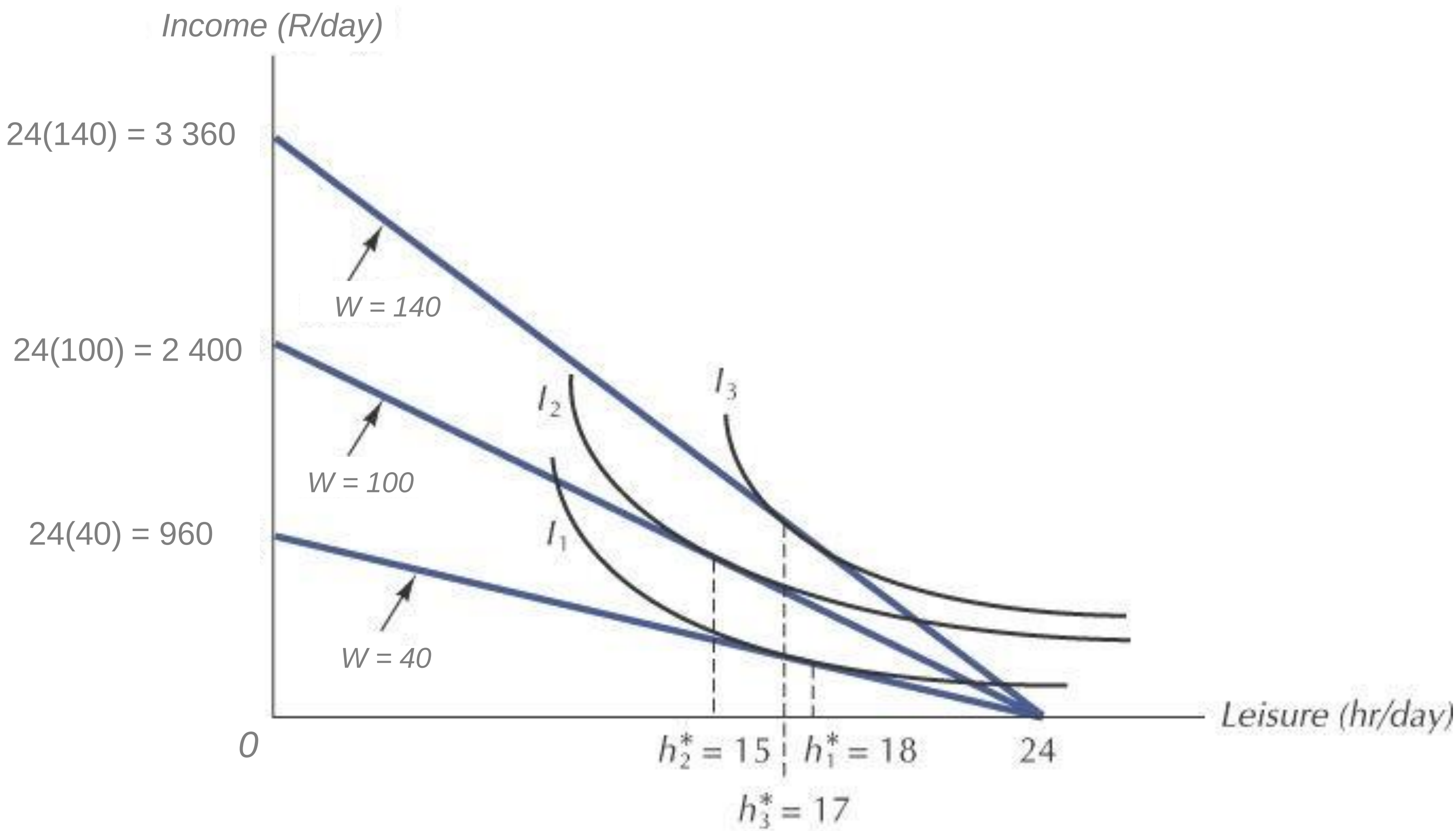


Figure 12.6: The Labor Supply Curve for the *i*th Worker

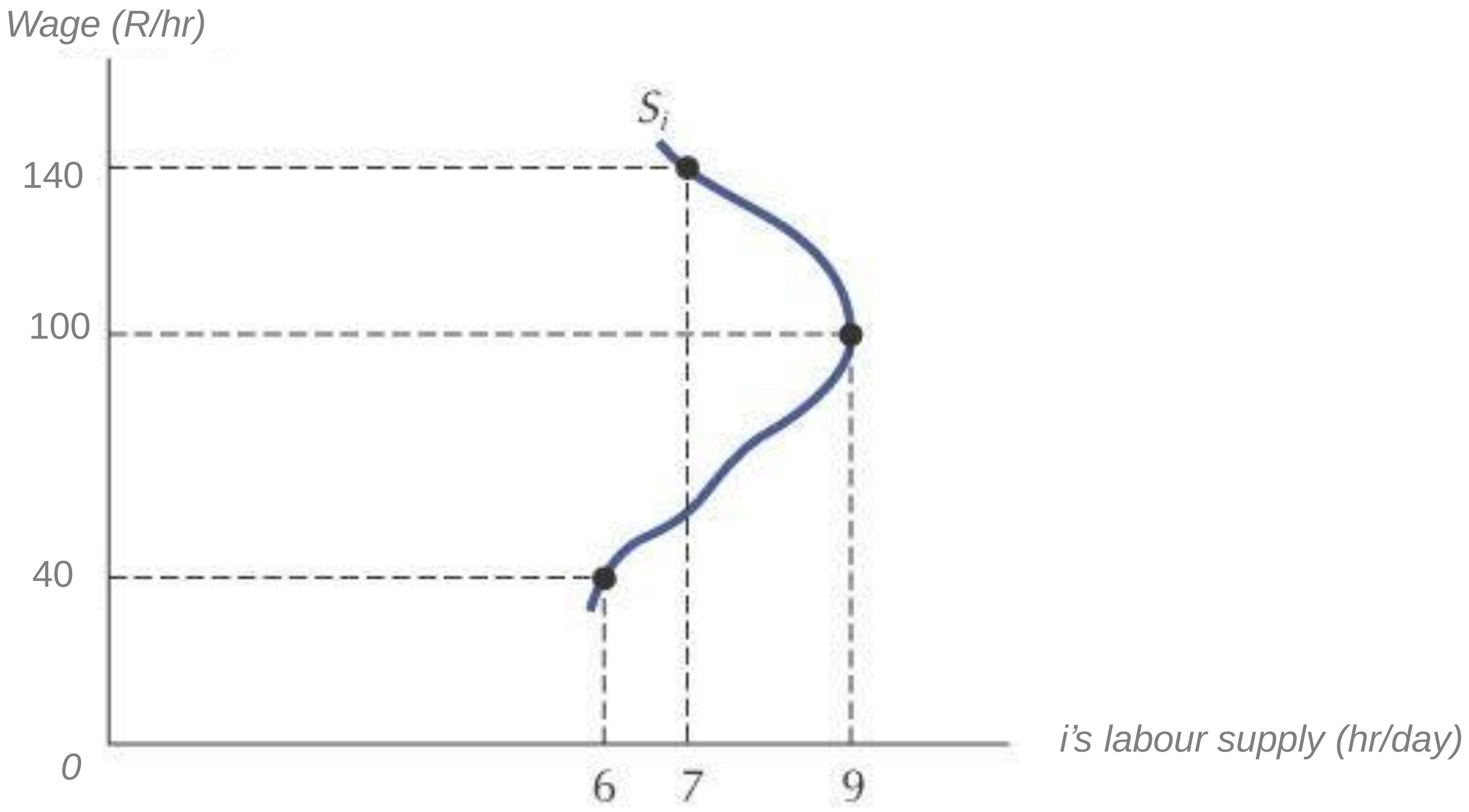
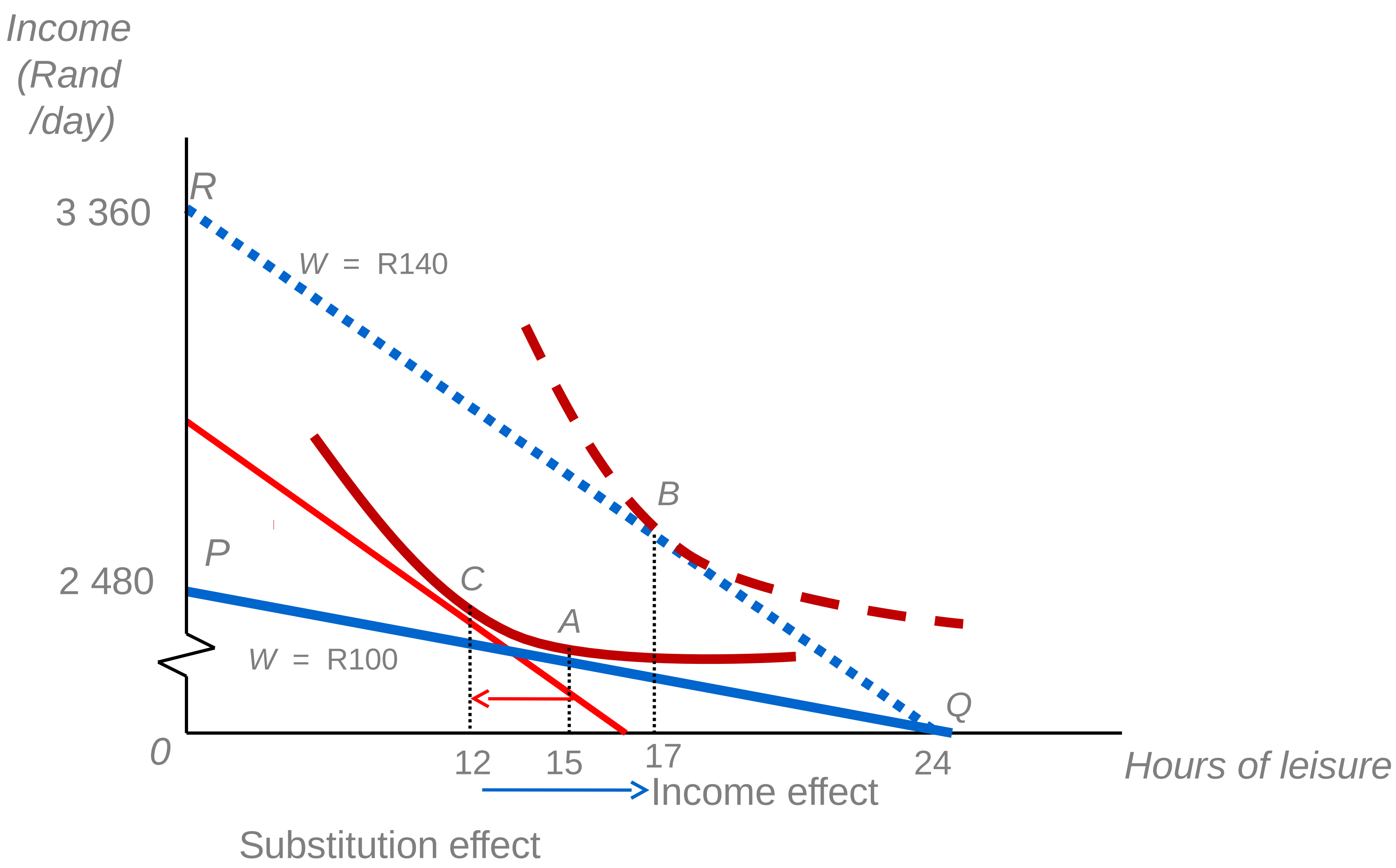


Figure 12.7: Substitution and Income effects of a Wage Increase



Income effect: Because of the increase in wages, your income goes up. Your budget curve **shifts out**, and you can now afford to buy more of both goods. This means you consume more leisure, i.e. you **work less.**

Substitution Effect: Because wage rises (while holding utility constant) your **budget curve swivels** around (becomes steeper), and leisure is now more expensive for you, so you consume less of it – i.e. you **work more.**

Income: work less, Substitution: work more

p://farm4.staticflickr.com/3277/3093809724_f7a844fec2_z.jp

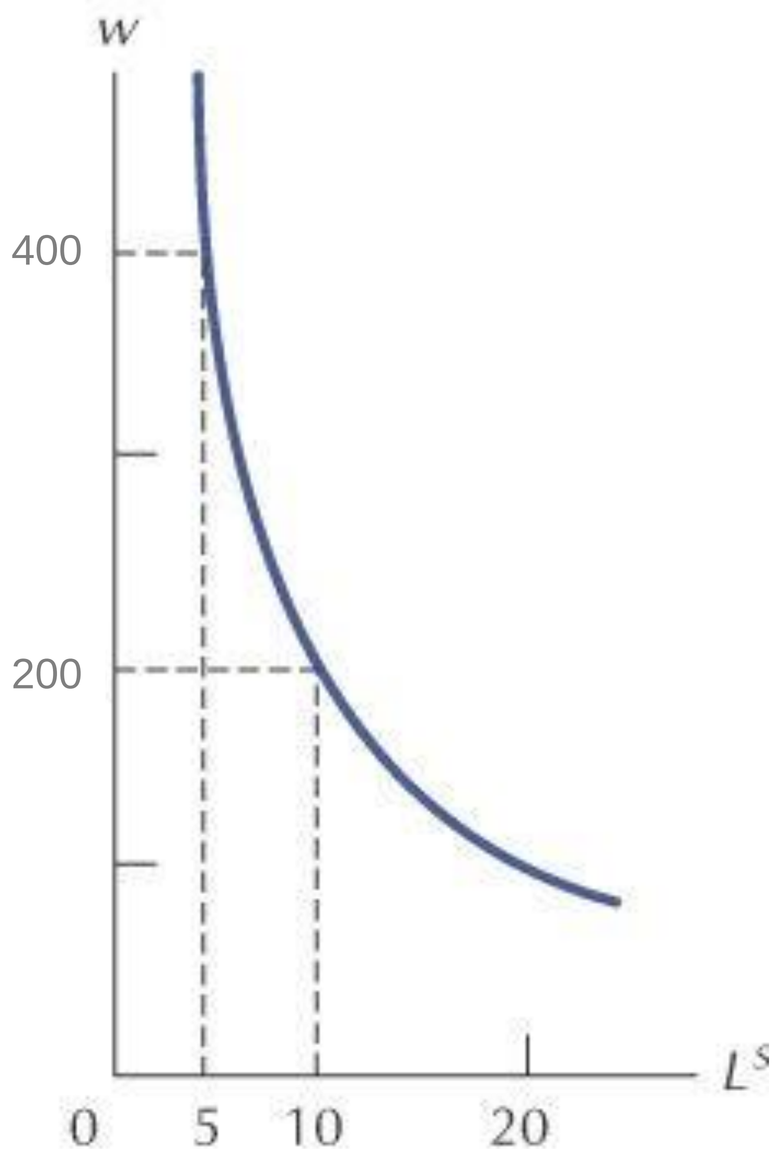
Why can't we get a taxi on rainy Days?

Do some people have backward bending supply curves for all levels of wage?

$wL^S = 2000$

$L^S = 2000/w$

Figure 12.8: The Labour Supply Curve for a Worker Seeking a Target Level of Income



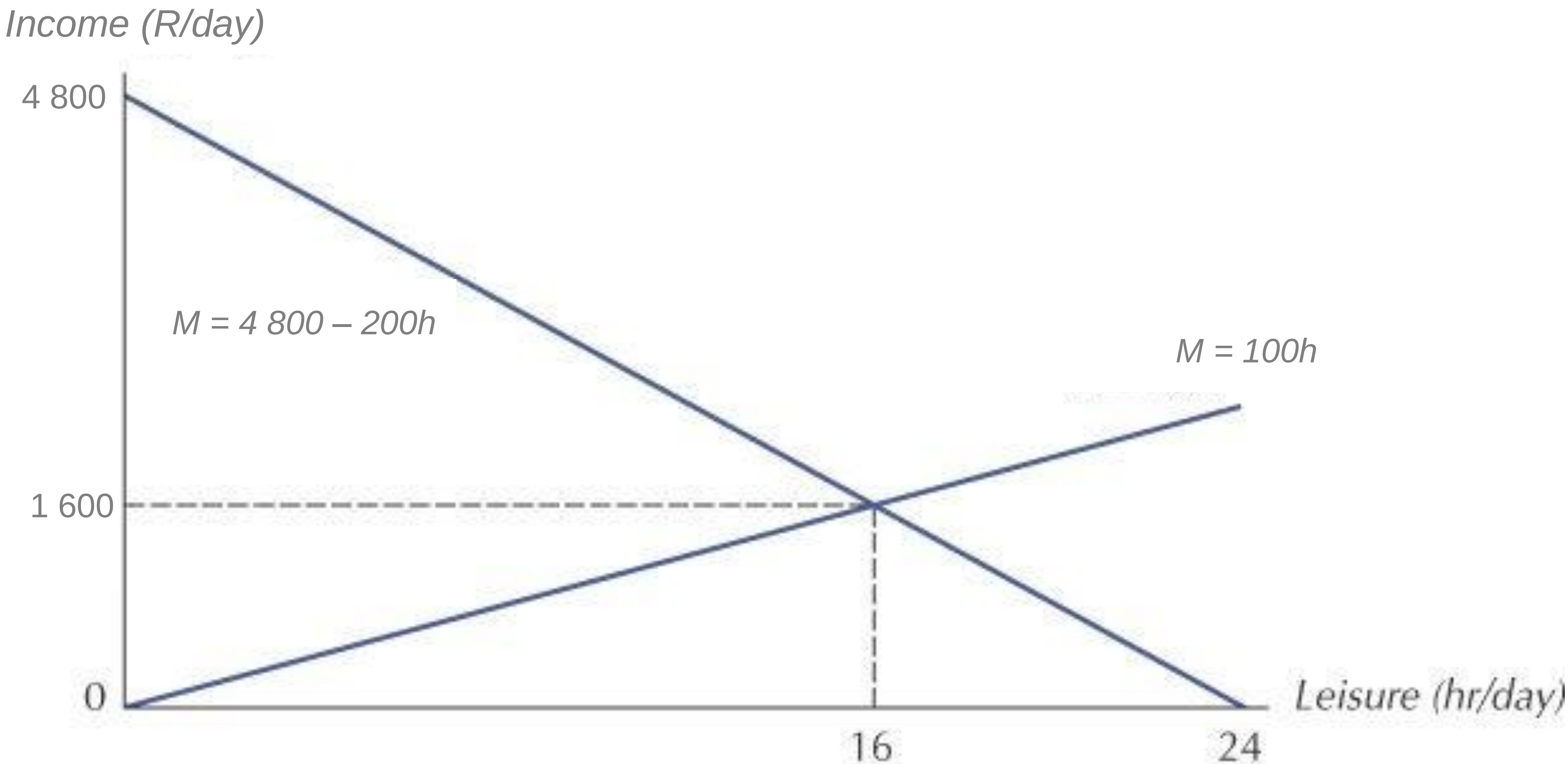
Find the optimal leisure demand for wage w = 200/hr for someone with income and leisure as **perfect complements** (R100:1hr ratio).

M = w(24-h) = 200(24-h) = 4800-200h

We need 1 hour leisure for every R100.
h = M/100 and therefore M = 100h

How much leisure do we consume?
4800-200h = 100h
→
h = 16

Leisure & Income as Perfect Complements



Note: P456 with perfect substitutes – make sure you work through

We may see individuals with only an upward sloping labour supply curve – i.e. where the substitution effect always dominates

Wage doesn't stay constant – think overtime (so you may get a kinked budget line)

Worldwide the work week has been declining, and real wages have been rising. Is this true in SA?

Does the backward bending supply curve explain this?

So **how realistic** is the theory of labour supply?

It is difficult in most jobs to change your hours. But you can select a job with more or fewer hours.

In general though, **hours aren't flexible** and neither are working conditions. One reason is the need for employee **interaction**.

So we can ask, why is the work week 40 hours? In general, because labourers want it to be. If **marginal benefit from working > marginal cost**, then we would work more.

Market Supply Curve: How do we obtain it?

Demand for labour in PC was not the sum of the individual firm demand, but supply of labour is.

Market Labour SS will slope upwards (no bendy stuff).
This is because higher wages will attract more entrants from other sectors.

Monopsony – a sole buyer in the labour market

In South Africa, small mining towns, School education market

Workers have limited mobility, other firms don't enter

Given a monopsonist's power, they might exploit their workers, and pay low wages

http://farm8.staticflickr.com/7011/6798855107_1e6287d0e5_z.jpg

Monopsony

Can an employer in the perfectly competitive labour market influence wages?

PC labour market = <u>horizontal labour supply</u>
One firm can't can't affect wage

Here **labour supply = market labour supply,** therefore **upward sloping SS** $_L$

What must I do if I want to hire one more worker?
Pay a higher wage

Think about **AFC, TFC, MFC**

At R10/hr, only 1 person will agree to work for me. At R12/hr, a 2nd person will agree, and at R14/hr, a third will work. But will the 1st one still agree to work at R10? And the second for R12 still?
No. I'll need to pay them all R14 too.
And so on, and so forth...

AFC = average payment per worker to achieve any level of employment (supply curve)

TFC = wage bill

number of labours*avg payment per worker (AFC)

MFC = increase in TFC as you hire 1 more worker

Please be careful about units

Average Factor Cost: average payment/worker to achieve a given level of output: <u>supply curve</u>

Total Factor Cost: AFC * L

Marginal Factor Cost: $\Delta TFC/\Delta L$ or (dTFC/dL)

In the following slide,

AFC = R40/worker when L = 100

TFC = AFC*L = 40*100 = R4000

What is the **marginal factor cost** when L = 100?

What is the **marginal factor cost** when L = 100?

MFC = ∆TFC/∆L

TFC when L = 100 is 40*100 = R4000

TFC when L = 101 is 41*101 = R4141

∆TFC = R4141-R4000 = R141

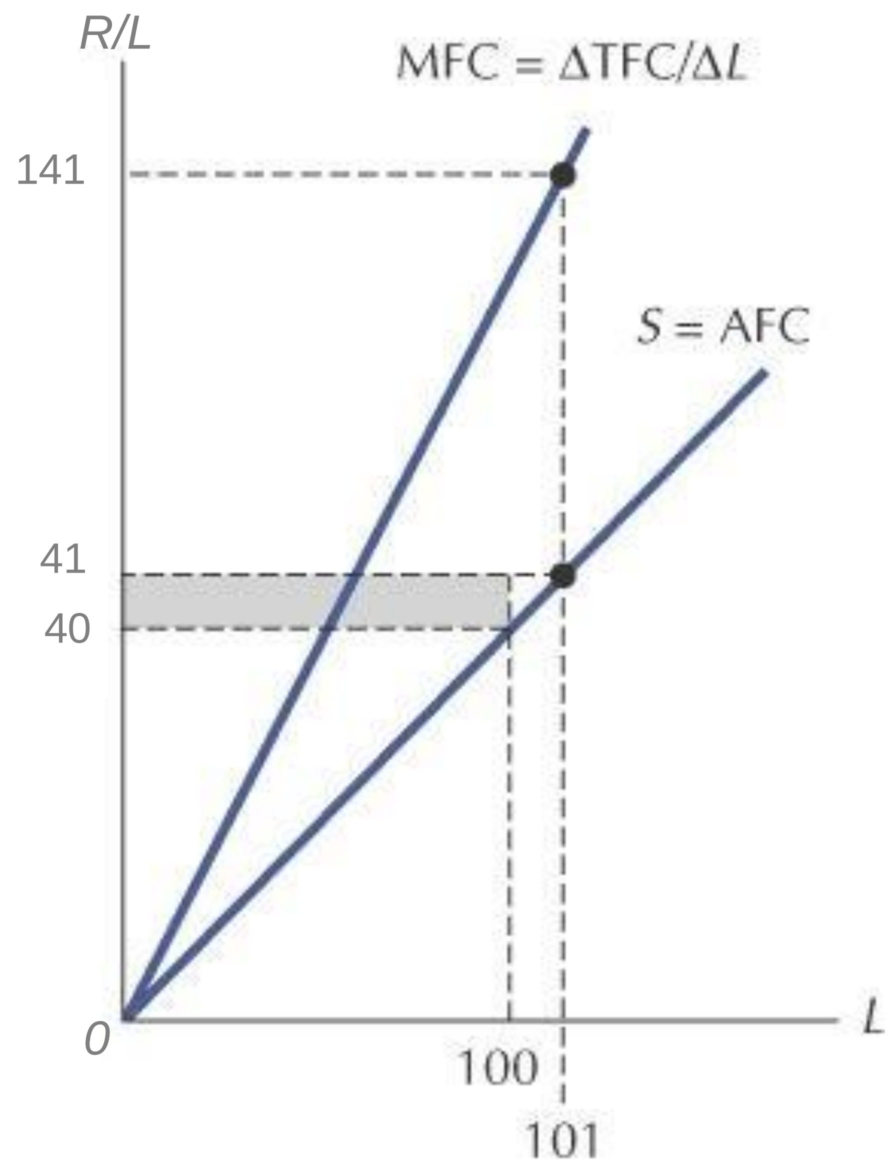
∆L = 101-100

Thus MFC = (141)/(1) = R141

That R141 is split up by giving that extra worker his wage of R41, and then splitting the R100 with the other 100 workers, to bring their wage up to R41

So for L = 101, AFC = 41, but MFC = 141 > AFC

Figure 12.11: Average and Marginal Factor Cost



Why does MFC lie above AFC?

For example, given
$AFC = a + 2bL$

Then
$TFC = AFC*L$
$TFC = aL + 2bL^2$

Therefore
$MFC = a + 4bL$
(mistake in textbook on page 461)

MFC = AFC with a steeper slope, thus lies above

How do we now put it all together for a monopsonist?

If PC in product market, hire based on $w = VMP_L$

If IC in product market, hire based on $w = MRP_L$

How much labour to hire?

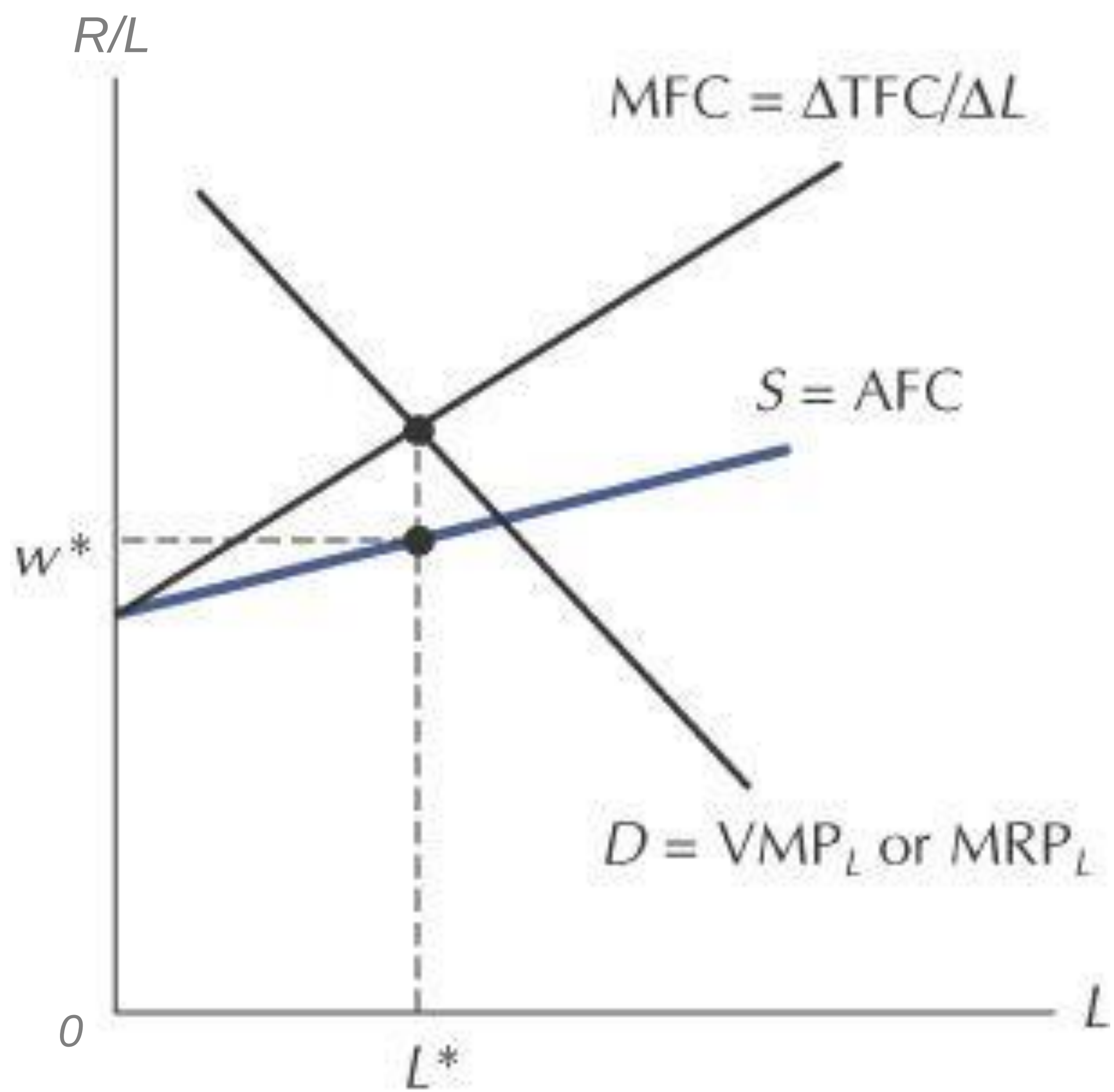
Hire labour where $MFC = DD_L$

What wage to pay?

Pay wage w* based on supply curve = AFC

How does this compare to perfect competition?

Figure 12.12: The Profit-Maximizing Wage and Employment Levels for a Monopsonist

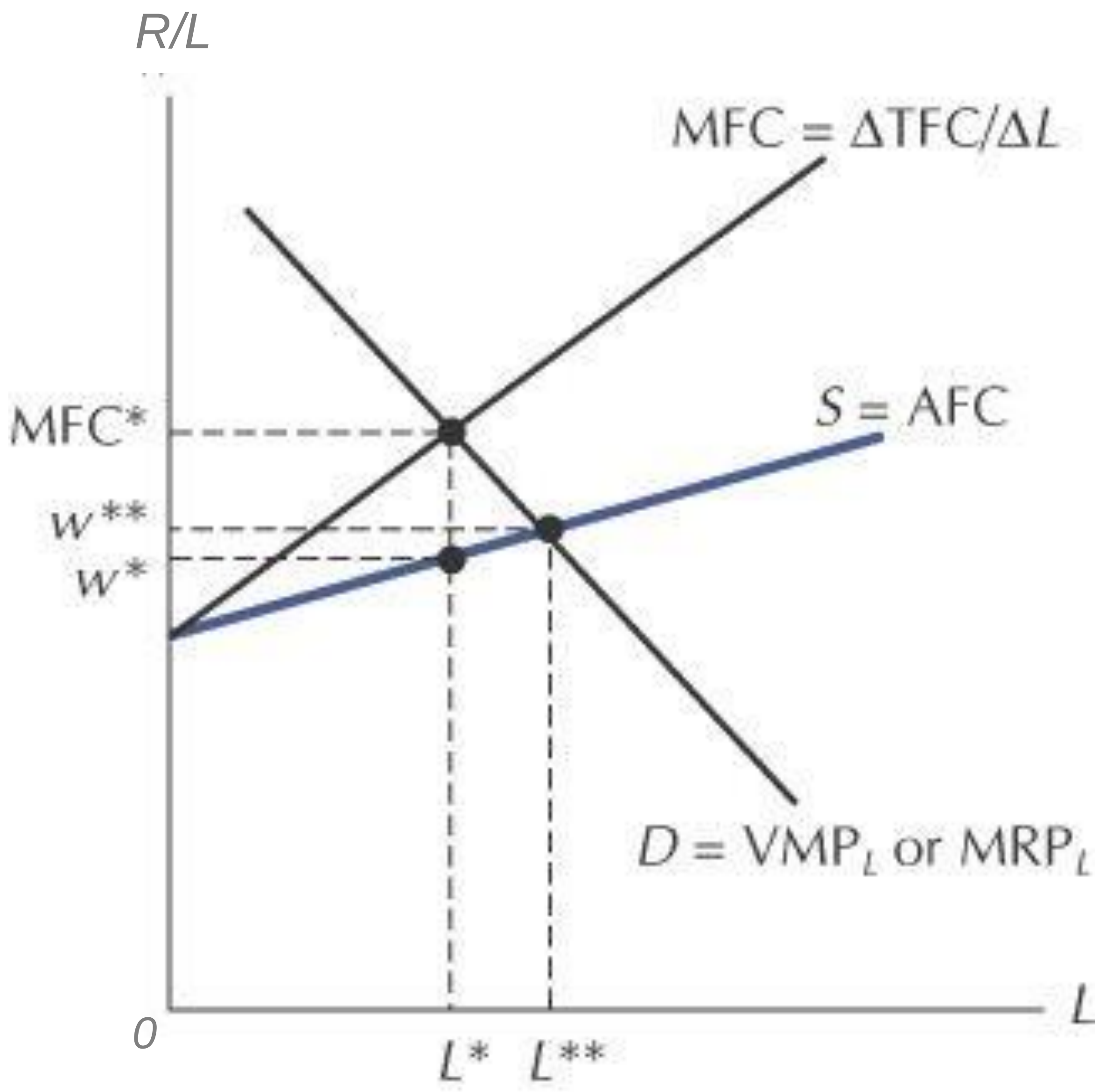


How to hire and what wage to pay is complicated

First decide on how much labour L* to hire
By seeing where MFC = D (either VMP or MRP)

Then go down and read off the supply curve (AFC) to find out the equilibrium wage w*
Why?
VMP or MRP = increase in revenue from hiring one more labourer
MFC = increase in costs from hiring one more labourer
Supply curve – what wage to pay, for a certain L

Figure 12.13: Comparing Monopsony and Competition in the Labor Market



Comparing PC and Monopsony

PC in labour mkt: hire L** where $SS_L = DD_L$

Pay wage w** = MFC = AFC

MFC lies on AFC

Monopsony: hire L* where $MFC = DD_L$

Pay wage w* (from S AFC)

Monopsonists pay less, and hire less than PC

This is inefficient

Last lecture summary

- Are monopsonists bad?
- What do minimum wages do? Do they always do this? Are they ever good?
- What do unions do, and are they good? How do unionised firms stay in business?
- Does discrimination exist, and why? Many reasons
- What is statistical discrimination?
- Why does David Beckham get paid so much?

NB: good here = efficient for the market

Note omissions from chapter 12

Monopoly Power and the wage rate – page 469 -half of P470

Internal wage structure – the middle of Page 476 until nearly to the end of P479

We cover some of discrimination lightly – see slides.

There is a lot – focus on what I've covered in lectures and tuts and you will be fine.

If monopsonists could hire one more worker without raising everyone else's wage, they could produce more (good for them) and the extra worker would be better off, but they can't.

Workers often aren't mobile and can't escape a monopsony situation

So **are monopsonists really exploitative?**

Firms that do pay lower wages in a town and earn higher profits see other firms eventually enter into the market, and workers won't choose to move to those towns or work at those firms